

Caves Canyon Valley Groundwater Basin

- Groundwater Basin Number: 6-38
- County: San Bernardino
- Surface Area: 73,100 acres (114 square miles)

Basin Boundaries and Hydrology

This groundwater basin underlies a portion of the lower Mojave River Valley in central San Bernardino County. The basin is bound by nonwater-bearing rocks of the Cady Mountains on the southeast, of the Cronise Mountains on the east, of the Cave Mountains on the northeast, of low hills on the north, and of the Alvord Mountains on the northwest (DWR 1964; Rogers 1967). The western boundary is a drainage divide. Average annual precipitation ranges from about 3 to 7 inches.

Hydrogeologic Information

Water Bearing Formations

Groundwater in the basin can be found in alluvium and lake deposits (DWR 1964). Holocene age alluvial deposits reaching about 220 feet thick are found along the course of the Mojave River (DWR 1964). These materials are underlain by alluvial deposits and materials associated with Pleistocene Lake Manix (DWR 1964; Stamos and others 2001). Older alluvial fan deposits are exposed along the flanks of the valley and project under the younger deposits. Alluvium typically consists of unconsolidated, fine- to coarse-grained sand, pebbles, and boulders with variable amounts of silt and clay.

Restrictive Structures

Rising groundwater is observed near Camp Cady that may be caused by a constriction of the alluvium (DWR 1967), an accumulation of less permeable, fine-grained deposits in the subsurface (Lines 1996), or a northwest-trending fault (Stamos and others 2001). The southwest trending Manix fault cuts through the central portion of the basin (Dibblee 1966; Dibblee and Bassett 1966; Rogers 1967); however, it is unknown if this fault is a barrier to groundwater movement.

Recharge Areas

The principal sources of recharge to the basin are percolation of runoff through alluvial fans at the base of the Alvord, Cave and Cady Mountains (DWR 1964), infiltration of occasional flood water in the Mojave River channel (Lines 1996), and underflow of the Mojave River (DWR 1967; Stamos and others 2001).

Groundwater Level Trends

In the western part of the basin, water levels were steady during 1992 through 1999, fluctuating seasonally about 12 feet in the early 1990s and about 6 feet in the late 1990s. In the central part of the basin, one well had dropped about 10 feet in the 1990s from the typical water level in the 1950s and 60s. In the eastern part of the basin, water levels in one well experienced a gradual decline of about 5 feet during 1992 through 1999.

Groundwater Storage

Groundwater Storage Capacity. The total groundwater storage capacity is estimated at 4,152,000 af (DWR 1967, 1975).

Groundwater in Storage. Unknown.

Groundwater Budget (Type A)

Average subsurface inflow to the basin is estimated to be 1,000 af/yr (DWR 1967) or about 170 af/yr (Stamos and others 2001). Average subsurface outflow to the basin is estimated to be none (DWR 1964) to about 2,100 af/yr (Hardt 1971). A recent numerical model of groundwater flow in the Mojave River basins (Stamos and others 2001) suggests an average recharge of 1,332 af/yr and an average discharge of 1,165 af/yr for this basin. The numerical model does not include pumping which is estimated to have been 2,861 af in 1961 (DWR 1967) or an average of 10 af/yr (DWR 1964).

Groundwater Quality

Characterization. In this groundwater basin, cation character is dominated by sodium; whereas anion character varies, with bicarbonate, chloride and sulfate contributing to dissolved constituents (DWR 1964). Historical measurements show TDS content ranging from 622 to 1,272 mg/L with an average of 904 mg/L (DWR 1964).

Impairments. Suitability of groundwater is rated inferior for irrigation and suitable to inferior for domestic use (DWR 1964).

Water Quality in Public Supply Wells

Constituent Group ¹	Number of wells sampled ²	Number of wells with a concentration above an MCL ³
Inorganics – Primary	1	1
Radiological	0	0
Nitrates	1	0
Pesticides	0	0
VOCs and SVOCs	0	0
Inorganics – Secondary	1	0

¹ A description of each member in the constituent groups and a generalized discussion of the relevance of these groups are included in *California's Groundwater – Bulletin 118* by DWR (2003).

² Represents distinct number of wells sampled as required under DHS Title 22 program from 1994 through 2000.

³ Each well reported with a concentration above an MCL was confirmed with a second detection above an MCL. This information is intended as an indicator of the types of activities that cause contamination in a given basin. It represents the water quality at the sample location. It does not indicate the water quality delivered to the consumer. More detailed drinking water quality information can be obtained from the local water purveyor and its annual Consumer Confidence Report.

Well Production Characteristics

Well yields (gal/min)		
Municipal/Irrigation	Range to 300 gal/min (DWR 1975; Bookman Edmonston Engineering 1994)	Average:
Total depths (ft)		
Domestic		
Municipal/Irrigation		

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
USGS	Groundwater levels	4
USGS	Miscellaneous water quality	1
Department of Health Services and cooperators	Title 22 water quality	4

Basin Management

Groundwater management:	A portion of this basin is managed as part of the Mojave Basin Area adjudication for which the Mojave Water Agency is watermaster
Water agencies	
Public	Mojave Water Agency
Private	

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Additional References

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Errata

Substantive changes made to the basin description will be noted here.